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EXAMINER	
DIVINE, LUCAS	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/932,039	PHILLIPS ET AL.	
	Examiner	Art Unit	
	Lucas Divine	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *20 and 21* is/are allowed.

6)☒ Claim(s) *1-7,9-16,18,19 and 22-30* is/are rejected.

7)☒ Claim(s) *8 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 August 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claims 1 – 30 are pending.

2. Drawing objection withdrawn.

Response to Arguments

3. Applicant's arguments filed 6/28/05 have been fully considered but they are not persuasive.

With respect to applicant's arguments on page 9 regarding claim 1 (and 10, page 13) that a) the teachings of Tognazzini refer to performing prediction operations after the job has been imaged and are void of any teaching or suggestion of predicting a likelihood that an image job will be imaged and b) that replacement of a consumable cartridge may in no fair interpretation be considered to suggest use of a consumable.

In reply, a) the first time 430 is run, the print counter has been reset, a job is printed. Then, every time the counter is above the threshold in 460, the call print test routine is called and the prediction is made of whether the next job will be able to be printed (Fig. 6). If so, it increments and loops around back to print that job. If not, different cases are brought up in Fig. 6 to handle the problem in various ways. Thus, step 620, executed before the next print job, predicts whether or not (the likelihood) the next print job will be able to print successfully.

b) Examiner feels that *an indication that the consumable used or in use has changed* is a fair interpretation of the claim. Thus, the indication that the cartridge has been changed indicates

a consumable in use has changed in step 450. Further, read another way a *use indication with respect to the consumable has been changed* is taught by switching the indication from yes to no and back, thus changing the indication of the cartridge in use for step 450. Both of these are believed to be examples of fair interpretations of the claim, and both are taught by Tognazzini. Thus, the rejection is maintained. If applicant means something more specific than the broad term 'change of use', applicant is invited to amend claim to more accurately define the invention being claimed.

With respect to applicant's arguments regarding claim 2 on pages 9 and 10 that the position taken in regards to the counters and thresholds is inconsistent.

In reply, the rejection to claim 1 reads *prediction operations are modified because the print counter is reset, thus the prediction operations are not predicting with the same data.* Thus, the counters and thresholds are the predictive data, as stored as discussed in the rejection to claim 2. Further, all data from program steps to results, etc. are inherently stored in some kind of cache, RAM, ROM, etc. within the printer and this limitation is clearly inherent to Tognazzini.

With respect to applicant's arguments regarding claim 7 on page 12 that the suspending limitations are not taught.

In reply, when a change of use is indicated, in step 450, the predictive operation 460 is not enabled to complete, thus suspended/interrupted, because the modification of prediction operations is implemented in step 420, thus the prediction operations are thus suspended until another print job takes place. So, at 450, when Yes option happens, the prediction operations

460 and 470 (which include Fig. 6) are 'barred for a period' 'interrupted' 'deferred from' 'ceased' 'suspended' until the next time through the cycle, during which the modification occurs to the print counter in 420, which affects the prediction operations. Thus, the suspension is taught and the rejection is maintained.

With respect to applicants arguments regarding claim 5 on pages 10-12 that the motivation for combining Naka and Tognazzini is improper.

In reply, while Tognazzini must have memory(s) to complete the steps and to store the data used in the system as discussed in the rejection to claim 2, thus leaving the exact configuration to be determined by one of ordinary skill in the art, and thus Tognazzini does not specifically teach that the memory for use in consumable related applications is located upon the consumable.

Naka teaches that the memory for use in consumable related applications is located upon the consumable (EEPROM 210 on ink cartridge 190, wherein the EEPROM is used to store and be accessed for consumable related applications [see Figs. 5-8]).

It would have been obvious to one of ordinary skill in the art that memory for use in consumable related applications could be located on the consumable itself and that there could have been more than one printer in the system. The motivation for doing so would have been to allow the information used in the applications to be used in multiple printers (col. 1 lines 35-37 of Naka). For example, if the consumable is moved to another printer, the data used associated with the consumable would be known to the new printer. Further, it is well known in the art that printing systems almost always have more than one printer connected in a system (and is taught

by Naka) and a person of ordinary skill in the art would find it obvious to that steps of Tognazzini could have been implemented in more than just one printer. See Fig. 3 of Tognazzini, which shows a common network, in which it would have been obvious to have more than just the one exemplified printer.

Further, in this non-final action, claim 2 is clarified to say it is inherent that the printer has access to a memory and additional explanations for the obviousness of multiple printers in a printing system have been added. Thus, the current rejection is clear and proper.

4. Applicant's arguments, see arguments, filed 6/28/05, with respect to claims 8, 20 and 21 have been fully considered and are persuasive. The rejection of claims 8, 20 and 21 has been withdrawn.

5. Applicant's arguments, see arguments, filed 6/28/05, with respect to the rejection(s) of claim(s) 9 and 18 under 102 (Taka) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Tognazzini and Naka.

Claim Objections

6. Claim 22 is objected to because of the following informalities: the claim recites "comparing a number of pages of the image job to be imaged with respect to predictive data". It is unclear what is being claimed. Are pages compared against each other? If not, is a number compared with something, if so what? Examiner feels that the number of pages is compared to

the predictive data, like in claim 29, and will interpret as so. If this is the case, claim 22 should be amended to show that this is being claimed. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1 – 3, 7, 10 – 12, 16, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Tognazzini (US 6028674).

Regarding claim 1, Tognazzini teaches **an image forming device** (for example printer 340, Fig. 3) **comprising:**

an image engine configured to use a consumable to form a hard image (image engine of printer 340 is inherent in order to print a job [step 430, Fig. 4]); **and**

processing circuitry coupled with the image engine (printer 340 inherently includes a processor in order to complete the flow chart steps of Figs. 4-6) **and configured to:**

perform prediction operations with respect to the consumable (Fig. 4, operations 410, 440, and 460 as well as Fig. 6, operations 610 and 620 are prediction operations with respect to the amount of ink left in the consumable) **to predict a likelihood that an image job will be imaged** (step 620 determines whether the ink supply is too low to complete a job, thus print test routine is called [see Fig. 6] which is run before the next job is printed to make sure it will be able to be printer [see the looping of Fig. 4, where the test is right before the print job in the loop from bottom to top);

receive a change of use indication with respect to the consumable (Fig. 4 step 450, wherein the cartridge being used is changed and a 'YES' indication is received)**; and modify the prediction operations responsive to the change of use** (Fig. 4 step 420, wherein the prediction operations are modified because the print counter is reset, thus the prediction operations are not predicting with the same data)**.**

Regarding claim 2, which depends from claim 1, Tognazzini further teaches **a memory** (inherent to the printer is a processor and access to a memory to complete the necessary steps) **configured to store predictive data regarding usage of the consumable responsive to the formation of hard images** (thresholds and counters used in Fig. 4 are inherently stored in a memory in order to perform the predictive operations)**, and wherein the processing circuitry is configured to access the predictive data to perform the prediction operations** (in order to utilize a stored print counter, the processor inherently must access the memory that stores the variables)**.**

Regarding claim 3, which depends from claim 2, Tognazzini further teaches **the processing circuitry is configured to reset the predictive data to modify the prediction operations** (Fig. 4 step 420, wherein the prediction operations are modified because the print counter is reset, thus the prediction operations are not predicting with the same data)**, and wherein the memory is configured to store subsequent predictive data after the resetting** (the counter is thus incremented in step 440 after the resetting)**, and the processing circuitry is configured to use the subsequent predictive data after the resetting to perform subsequent prediction operations after the resetting** (step 460 of Fig. 4, wherein the counter that was reset and incremented is used in the predictive process)**.**

Regarding claim 7, which depends from claim 1, Tognazzini further teaches that the **processing circuitry is configured to suspend the prediction operations to modify the prediction operations** (when a change of use is indicated, in step 450, the predictive operation 460 is not enabled to complete, thus suspended/interrupted, because the modification of prediction operations is implemented in step 420, thus the prediction operations are thus suspended until another print job takes place).

Regarding claim 10, the structural elements of apparatus claim 1 perform all of the method steps of method claim 10. Therefore, claim 10 is rejected for the same reasons as stated above in the rejection of claim 1.

Regarding claim 11, which depends from claim 10, the structural elements of apparatus claim 2 perform all of the method steps of method claim 11. Therefore, claim 11 is rejected for the same reasons as stated above in the rejection of claim 2.

Regarding claim 12, which depends from claim 11, the structural elements of apparatus claim 3 perform all of the method steps of method claim 12. Therefore, claim 12 is rejected for the same reasons as stated above in the rejection of claim 3.

Regarding claim 16, which depends from claim 10, the structural elements of apparatus claim 7 perform all of the method steps of method claim 16. Therefore, claim 16 is rejected for the same reasons as stated above in the rejection of claim 7.

Regarding claim 27, which depends from claim 7, Tognazzini teaches **the processing circuitry is configured to control the image engine to form hard images of image jobs during suspension of the prediction operations** (Fig. 4 shows that in the case where the change of use occurs [Y 450], the prediction operations are suspended/deferred/interrupted because the

counter is modified in 420, and then the next print job is formed, thus, during the suspension [between the last and next predictions], imaging of jobs takes place).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini as applied to claims 1, 2, 10, and 11 above, and further in view of Klein (US 6035295).

Regarding claim 4, which depends from claim 2, Tognazzini teaches a system where a new cartridge is loaded (change of use), the old data that is remaining in the systems from predictive steps 460, 470, 610, and 620, is no longer valid and has a defect. Therefore if the system used such data, it would produce incorrect results.

Tognazzini does not specifically teach a **warning** associated with data that has a defect.

Klein teaches sending a warning associated with data that has a defect in Fig. 25B, steps 242 and 248.

It would have been obvious to one of ordinary skill in the art that the system of Tognazzini should not use the defected data and therefore a warning to not use the data would be appropriate as shown in Klein. The motivation for doing so would have been to keep the predictions accurate by not using data that is not up-to-date.

Regarding claim 13, which depends from claim 11, the structural elements of apparatus claim 4 perform all of the method steps of method claim 13. Therefore, claim 13 is rejected for the same reasons as stated above in the rejection of claim 4.

9. Claims 6 and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini as applied to claims 1 and 10 above, and further in view of Naka (US 6672695).

Regarding claim 6, which depends from claim 1, Tognazzini teaches a form of **historical data regarding usage of the consumable responsive to the formation of hard images** (print counter, Fig. 4) for the past operations of a cartridge and **the processing circuitry is configured to use the historical data to perform the prediction operations** (used in predictive step 460, Fig. 4).

Tognazzini does not specifically teach **maintaining the historical data after the change of use.**

Naka teaches **maintaining the historical data after the change of use** (cartridge history and the ink total consumption amount, see Fig. 2 of Naka, are maintained throughout the life of the consumable as stored on the consumable, no matter where the cartridge is placed or how many different printers it is located [change of use]).

It would have been obvious to one of ordinary skill in the art to place cartridge history data on the cartridge itself as in Naka. For example, the ink capacity would translate as the threshold in Tognazzini and the ink total consumption amount would translate to the counter. The motivation for doing so would have been to allow the consumable to be used in more than

once device and still have both devices be able to correctly predict if a job can be printed by the consumable.

Regarding claim 15, which depends from claim 10, the structural elements of apparatus claim 6 perform all of the method steps of method claim 15. Therefore, claim 15 is rejected for the same reasons as stated above in the rejection of claim 6.

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini as applied to claim 10 above, and further in view of Naka.

Regarding claim 19, which depends from claim 10, Tognazzini teaches that **the indicating is responsive to the moving** of a cartridge into the system (when a cartridge is taken from one device and placed in the printer of Tognazzini, it is detected and verified by step 450 of Fig. 4, thus the indicating of a change of a new cartridge, no matter where it came from).

Tognazzini does not specifically teach **moving the consumable from a first image forming device to a second image forming device.**

Naka teaches **moving the consumable from a first image forming device to a second image forming device** (col. 1 lines 35-37).

It would have been obvious to one of ordinary skill in the art that the detecting of a consumable could be a new consumable as taught by Tognazzini or it could have been a consumable from another device, as taught by Naka. The motivation for moving one cartridge to another could have been to keep a vital printer operational by taking a consumable from a non-vital printer to allow for continued printing of the vital printer.

11. Claims 5, 14, 9, 18, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini as applied to claims 1, 2, 10, and 11 above, and further in view of Naka.

Regarding claim 5, which depends from claim 2, while Tognazzini must have memory(s) to complete the steps and to store the data used in the system as discussed in the rejection to claim 2, thus leaving the exact configuration to be determined by one of ordinary skill in the art, and thus Tognazzini does not specifically teach that **the memory** for use in consumable related applications **is located upon the consumable.**

Naka teaches that **the memory** for use in consumable related applications **is located upon the consumable** (EEPROM 210 on ink cartridge 190, wherein the EEPROM is used to store and be accessed for consumable related applications [see Figs. 5-8]).

It would have been obvious to one of ordinary skill in the art that memory for use in consumable related applications could be located on the consumable itself and that there could have been more than one printer in the system. The motivation for doing so would have been to allow the information used in the applications to be used in multiple printers (col. 1 lines 35-37 of Naka). For example, if the consumable is moved to another printer, the data used associated with the consumable would be known to the new printer. Further, it is well known in the art that printing systems almost always have more than one printer connected in a system (and is taught by Naka) and a person of ordinary skill in the art would find it obvious to that steps of Tognazzini could have been implemented in more than just one printer. See Fig. 3 of Tognazzini, which shows a common network, in which it would have been obvious to have more than just the one exemplified printer.

Regarding claim 14, which depends from claim 11, the structural elements of apparatus claim 5 perform all of the method steps of method claim 14. Therefore, claim 14 is rejected for the same reasons as stated above in the rejection of claim 5.

Regarding claim 23, which depends from claim 1, by adding the ability of cartridges to move from one printer to another and still keep usage data as taught in Naka to the system of Tognazzini as obvious in the discussion of claim 5, the adding of a cartridge changing of Tognazzini can be a new cartridge or a cartridge that has been moved from one other printer to this one. Each printer is its own type environment (has different jobs sent to it, has different data in it, has different temperature/humidity around it, and thus is never exactly the same as another printer's environment type). Further, some cartridges can be used in multiple types of printer models, thus each one is a different type/model. Thus, by allowing the moving of cartridge as taught by Naka and implemented in the obvious system of Tognazzini and Naka, the limitation of claim 23 is met.

Regarding claim 9, which depends from claim 1, while Tognazzini teaches monitoring and controlling consumables in a networked printing environment (Fig. 3), Tognazzini does not teach that there could be more than one printer for consumables to be located in.

However, Naka teaches multiple printers for consumables to be located in, including noting the change of use (see 450 of Tognazzini compared to similar S1 of Naka). Naka also teaches not only being able to move cartridges from printer to printer, but also that **processing circuitry is configured to verify the change of use indication responsive to receiving the change of use indication**(Fig. 7 steps S3-11, 13, and 15 verify the change of consumable, either the consumable is new, has been here before, or is a non-new consumable from a different

device), **and to modify the prediction operations responsive to the verification** (e.g. the determination steps of Fig. 7 that modify what data is valid and use it). Thus, when a consumable is replaced, it could be replaced by itself, or others or whatever, and a verification step is completed before any printing and estimation steps are completed.

It would have been obvious to one of ordinary skill in the art that there could have been multiple printers in the system of Tognazzini and that consumables could be moved from one to another as taught in Naka. The motivations for having plural printers are well known in the art (e.g. if one breaks down, another can be used etc.). The motivations for allowing people to move cartridges between printers. For example, one has magenta ink out, and another is out of commission. The user could grab the ink out of the broken printer and put it in the first printer to enable printing. Other advantages can be seen as discussed in Naka. In the combined system then the steps of Naka would replace the simplified steps of 450 and 420 in Tognazzini.

Regarding claim 18, which depends from claim 10, the structural elements of apparatus claim 9 perform all of the method steps of method claim 18. Therefore, claim 18 is rejected for the same reasons as stated above in the rejection of claim 9.

12. Claims 24, 26, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini as applied to claims 1 and 10 above, and further in view of McIntyre (US 5706037).

Regarding claim 24, which depends from claim 1, while Tognazzini teaches testing if the ink is sufficiently dark for printing, Tognazzini does not specifically teach testing whether the density is sufficient for just one sheet (thus accessing data relevant for one sheet).

However, McIntyre teaches in Fig. 3, that the test of enough ink for printing is done for each page and the 'no ink value' is **access data indicative of an amount of the consumable used to print a single sheet of paper.** In S211, if the no ink value is set (L1), then the page is not printed. If the no ink value is not set, the page is printed, and this processes is repeated until there is either no ink left or the end of document. Thus, in cases where the ink level is low, as many pages as possible are printed out with the current toner.

It would have been obvious to one of ordinary skill in the art to add the sheet by sheet comparing feature of McIntyre in order to print as many pages as possible for the user as well as not wasting any toner by replacing before it was completely out.

Regarding claims 26 and 30, which depend from claims 1 and 10, while Tognazzini teaches actually printing a print job in step 430, Tognazzini does not specifically teach when the printing for that job is requested.

McIntyre teaches prediction operations after a print job has been requested (S12) and responsive to the provision of the image job has arrived.

It would have been obvious to one of ordinary skill in the art to complete the prediction operations of Tognazzini only after a job has arrived or has been requested, thus adding step S12 between 440 and 450. It would make sense to do so because it wouldn't matter if the cartridge is changed if there is no job to print. Also, the processor would be able to save processing time by only performing steps 450, 460, 470 (including all of Fig. 6) when there was actually a job in the system, such as taught in McIntyre. Further, the warnings and other actions possibly taken in Fig. 6 would be most beneficial if someone was there to recognize it. By waiting until a print job

has been requested or arrived, the system can better ensure a user will recognize and fix the errors detected in Fig. 6.

13. Claims 22, 25, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tognazzini as applied to claims 1 and 10 above, and further in view of Smith (US 6609212).

Regarding claims 22, 25, 28, and 29, which depend from claims 1 and 10, while Tognazzini tests in step 620 whether the ink density is sufficiently dark for the printing of the job, but does not specifically teach taking into account that jobs can have many or few pages and to account for that.

However, Smith teaches doing predictive operations to determine the likelihood of completion of print jobs by including the number of pages in the predictions (see throughout and the example in col. 10 lines 14-35).

It would have been obvious to one of ordinary skill in the art to add determinations based on the number of pages to the prediction system of Tognazzini. The motivations for doing so would have been to allow the more accurate prediction of the ability to print jobs by including taking into account large and small jobs in predictions. This could be done in a number of ways, by adding in another step, by including the information in the term 'sufficiently dark' for that number of pages or other methods.

Allowable Subject Matter

14. Claims 20 and 21 are allowed.

15. Claims 8 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. All of these patents discuss prediction of toner usage and printing print jobs using the number of pages – Yamamoto (US 6584291), Moreau et al. (US 6903837), and Garr et al. (US 5802420) – and are suggested to applicant to review. Further, applicant's attention is drawn to Ito et al. (US 6658219) which discusses a method, device, system and recording medium for detecting improper cartridge, and cartridge including detecting a change of use as well as warning of suspect data.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Divine whose telephone number is 571-272-7432. The examiner can normally be reached on Monday - Friday, 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lucas Divine
Examiner
Art Unit 2624

ljd

KING Y. POON
PRIMARY EXAMINER